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| APPLICATION NO.                                                                                                                                  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.      | CONFIRMATION NO. |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|--------------------------|------------------|
| 10/042,543                                                                                                                                       | 01/08/2002  | Warren B. Jackson    | D/A0977                  | 5499             |
| 7590 01/23/2007<br>Mark S. Svat<br>FAY, SHARPE, FAGAN, MINNICH & McKEE, LLP<br>1100 Superior Avenue<br>Seventh Floor<br>Cleveland, OH 44114-2579 |             |                      | EXAMINER<br>YACOB, SISAY |                  |
|                                                                                                                                                  |             |                      | ART UNIT<br>2612         | PAPER NUMBER     |
| SHORTENED STATUTORY PERIOD OF RESPONSE                                                                                                           |             | MAIL DATE            | DELIVERY MODE            |                  |
| 3 MONTHS                                                                                                                                         |             | 01/23/2007           | PAPER                    |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/042,543

Applicant(s)

JACKSON ET AL.

Examiner

Sisay Yacob

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 15 and 20 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-15 and 17-19 is/are allowed.
- 6) ☒ Claim(s) 1-8 and 21-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 November 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1 This communication is in response to applicant's amendment to first non-final office action, which was filed November 08, 2006.

2 Amendments and arguments to rejected claims 1-26, and new claims 27 and 28 have been entered and made of record in the application of Jackson et al. for "Analog actuation allocation structure with many actuators" filed on January 8, 2002 has been examined.

Claims 9, 17 and 21 are amended.

Claims 1-8, 10-15, 18, 19 and 22-26 are the same as originally filed.

Claims 16 and 20 are canceled.

Claims 27 and 28 are newly introduced.

Claims 1-28 are pending.

3 Drawings were received on November 08, 2006. These drawings are in compliance with 37 CFR 1.84(p)(4). Now the replacement drawing for figure 1, which is labeled as a "prior art" has been entered and made of record in the application.

### **Response to Arguments**

4 Applicant's amendments and arguments with respect to claims 1-8 and 21-26 have been fully considered, but are not persuasive in view of the rejection cited below in their respective rejection section. The prior arts presented in the earlier office action have been used herein with further explanation, in account of the argument presented by the applicant, to further address applicant concern and to clearly show how the limitation of the claims are met by the same. Further, new grounds of rejections are necessitated by applicant's amendments.

5 Applicant's arguments with respect to claim 1-8 have been fully considered, but are not persuasive in view of the rejection cited below in their respective rejection section. The prior arts presented in the earlier office action have been used herein with further explanation, in account of the argument presented by the applicant, to further address applicant concern and to clearly show how the limitation of the claims are met by the same.

6 On Page 9 Par. 5-6, Page 10, Par. 1-2 and all subsequent applicant argue with respect to the independent claim 1 and its dependent claims 2-8, invention that application's specification defines "an actuation system, such as those which may be used with smart matter that can be employed to move sheets of paper (for example, in a printing machine), maneuver an aircraft by performing tiny adjustments to wing surfaces, or to otherwise produce some physical output in

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response to an input signal. In the first example, actuators in the form of air jets apply forces to a sheet of paper to direct the motion of the sheet through a printing machine". The limitations on which the Application relies are not stated in the claims. It is the claims that define the claimed invention, and it is claims, not specifications that are anticipated or unpatentable.

7 On Page 10, Par. 3-5, Page 10, Par. 1-5 and all subsequent applicant argue with respect to the independent claim 1 and its dependent claims 2-8, as to the prior art falling to disclose, teach or suggest "a resistive strip connected to the plurality of rows of actuators".

8 Muurinen discloses a resistive strips (Col. 8, lines 24-32; Item 901 and 902 of figure 9) that is connected to the to the plurality of rows of actuators (Col. 8, lines 39-42; Col. 10, lines 33-49; Items 908 of figure 9).

9 Applicant's amendments and arguments with respect to claims 21-26 have been fully considered, but are moot in view of the new grounds of rejections, which are necessitated by applicant's amendments.

### Claim Rejections - 35 USC § 102

10 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11 Claims 1, 2, 4 and 28 are rejected under 35 U.S.C. 102(e) as being as being anticipated by US Patent of Muurinen (6,504,492 B1).

12 As to claim 1, Muurinen discloses a system for producing an actuator response (Col. 2, lines 31-43), the system comprising a plurality of rows of actuators capable of producing an actuator response in reply to an control signal (Item 907 of figure 9), a resistive strip (Col. 8, lines 24-32; Items 901 and 902 of figure 9) connected to the plurality of rows of actuators (Col. 8, lines 39-42; Col. 10, lines 33-49; Item 908 of figure 9), and a first electrode (Item 905 of figure 9) having a first voltage (Item Vcc of figure 9) connected to the resistive strip and a second electrode (Item 906 of figure 9) having a second voltage (Item Vout of figure 9) connected to the resistive strip for transmitting the control signal to the

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rows of actuators to thereby cause the rows of actuators to produce the actuator response (Col. 8, lines 24-67; Col. 9, lines 1-2).

13 As to claim 2, the system of claim 1, further, Muurinen discloses wherein the plurality of rows of actuators produce the actuator response that depends on a locally computed value of a function of the control signal (Col. 9, lines 3-13).

14 As to claim 4, the system of claims 3, further, Muurinen discloses wherein the first electrode is connected to a first end of the resistive strip, and the second electrode is connected to a second end of the resistive strip (See figures 9 and 10).

15 As to claim 28, the system of claim 1, further, Muurinen discloses, as alternative embodiment, wherein the plurality of rows are configured to be in permanent contact with the resistive strip (**the actuator will be in permanent contact thorough item 303 of figures 3a, 4a, 5a and 6a**).

### Rejections - 35 USC § 103

16 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be

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patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17 The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

18 Claims 3 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent of Muurinen (6,504,492 B1).

19 As to claim 3, the system of claim 1, however, Muurinen does not expressly disclose wherein the length of the resistive strip is substantially equal to a correlation length in which each row in the plurality of rows is correlated to every other row in the plurality of rows. But, Muurinen discloses the length of the resistive strip is employed to determine the electrical characteristics of the actuation based on the connection point (Col. 3, lines 36-47).

It would have been obvious, to one skilled in art, to have the length of the resistive strip is substantially equal to a correlation length in which each row in the plurality of rows is correlated to every other row in the plurality of rows, because Muurinen discloses the length of the resistive strip is employed to



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determined the electrical characteristics of the actuation and one skilled in the art would realize the length of the resistive strip may be substantially equal to a correlation length in which each row in the plurality of rows is correlated to every other row in the plurality of rows, which may make determining the connection point easier.

20 As to claims 5-8, the system of claims 1 and 4, it would have been obvious to one skilled in the art, to have the first voltage has a value  $V_1$  and the second voltage has a value  $V_2$  such that  $(V_1+V_2)/2$  is chosen to approximate a desired actuation profile, because, since Muurinen discloses the equivalent circuit for the resistive strips based on distances (Col. 5, lines 6-21; See figures 3b, 4b, 5b, 6b, 11a-b and 13) and one skilled in the art realizes that the voltage at half distance between  $V_1$  and  $V_2$  would give the  $(V_1+V_2)/2$ . Also, the first voltage has a value  $V_1$  and the second voltage has a value  $V_2$  such that  $(V_1- V_2)$  is chosen to approximate a desired actuation profile wherein  $(V_1- V_2)$  is chosen to substantially equal an average slope of the desired actuation profile over a position substantially equal to a location of the resistive strip.

21 Claims 21-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent of Muurinen (6,504,492 B1) in view of Non-Patent Publication of Konishi et al, System Design for Cooperative Control of a Microactuator Array.

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22 As to claim 21, Muurinen discloses a method for producing an actuator response (Col. 2, lines 31-43), the method comprising electrically connecting a plurality of rows of actuators to a resistive strip (Item 901 of figure 9), said actuators capable of producing an actuator response in reply to a control signal (Item 907 of figure 9), applying a first voltage to the resistive strip via a first electrode (Items 905 and Vcc of figure 9), and applying a second voltage to the resistive strip via a second electrode (Items 906 and Vout of figure 9), wherein the application of said first voltage and said second voltage provides the control signal that causes the actuators to produce the actuator response (Col. 8, lines 24-67; Col. 9, lines 1-2). However, Muurinen does not expressly disclose the actuator response being a non-electrical. Konishi et al., discloses a method for producing a non-electrical actuator response (Page 450, Col. 1-2).

It would have been obvious, to one skilled in art, to modify the method of Muurinen, in order to have the method for producing a non-electrical actuator response comprising electrically connecting a plurality of rows of actuators to a resistive strip, said actuators capable of producing a non-electrical actuator response in reply to a control signal, applying a first voltage to the resistive strip via a first electrode, and applying a second voltage to the resistive strip via a second electrode, wherein the application of said first voltage and said second voltage provides the electrical control signal that causes the actuators to produce the non-electrical actuator response, because Muurinen discloses a method for producing an electrical actuator response and one skilled in the art would realize the electrical actuator response may be replaced by other actuator response,

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such as a non-electrical actuator response. Furthermore, it is well known to have a non-electric actuator response in response to an electrical control signals.

23 As to claim 22, the method of claim 21, however, the combination of Muurinen and Konishi et al., does not expressly disclose wherein the length of the resistive strip is substantially equal to a correlation length in which each row in the plurality of rows is correlated to every other row in the plurality of rows. But, Muurinen discloses the length of the resistive strip is employed to determine the electrical characteristics of the actuation based on the connection point (Col. 3, lines 36-47).

It would have been obvious, to one skilled in art, to have the length of the resistive strip is substantially equal to a correlation length in which each row in the plurality of rows is correlated to every other row in the plurality of rows, because Muurinen discloses the length of the resistive strip is employed to determined the electrical characteristics of the actuation and one skilled in the art would realize the length of the resistive strip may be substantially equal to a correlation length in which each row in the plurality of rows is correlated to every other row in the plurality of rows, which may make determining the connection point easier.

24 As to claims 23-26, the system and method of claim 21, it would have been obvious to one skilled in the art, to have the first voltage has a value  $V_1$  and the second voltage has a value  $V_2$  such that  $(V_1+V_2)/2$  is chosen to approximate

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a desired actuation profile, because, since Muurinen discloses the equivalent circuit for the resistive strips based on distances (Col. 5, lines 6-21; See figures 3b, 4b, 5b, 6b, 11a-b and 13) and one skilled in the art realizes that the voltage at half distance between  $V_1$  and  $V_2$  would give the  $(V_1+V_2)/2$ . Also, the first voltage has a value  $V_1$  and the second voltage has a value  $V_2$  such that  $(V_1 - V_2)$  is chosen to approximate a desired actuation profile wherein  $(V_1 - V_2)$  is chosen to substantially equal an average slope of the desired actuation profile over a position substantially equal to a location of the resistive strip.

25 As to claim 27, the system of claim 1, further, Konishi et al., discloses wherein the actuator response is a non-electrical response and the control signal is an electrical control signal (Page 450, Col. 1-2).

### **Allowable Subject Matter**

Claims 9-15 and 17-19 are allowable.

26 Referring to claims 9-15 and 17-19, independent claims 9 and 17 included allowable subject matters as it was indicated in previous office action.

### Conclusion

27 Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

28 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sisay Yacob whose telephone number is (571) 272-8562. The examiner can normally be reached on Monday through Friday 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffery A. Hofsass can be reached on (571) 272-2981.

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The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sisay Yacob

1/16/2007

S.Y.



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